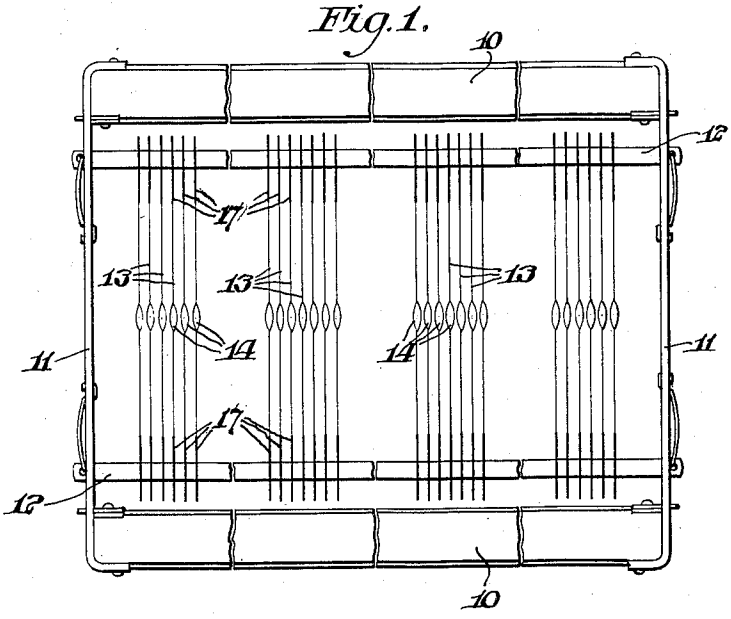
July 18, 1939. J. J. KAUFMANN 2,166,895

LOOM HARNESS

Filed April 21, 1937

Fig. 1.



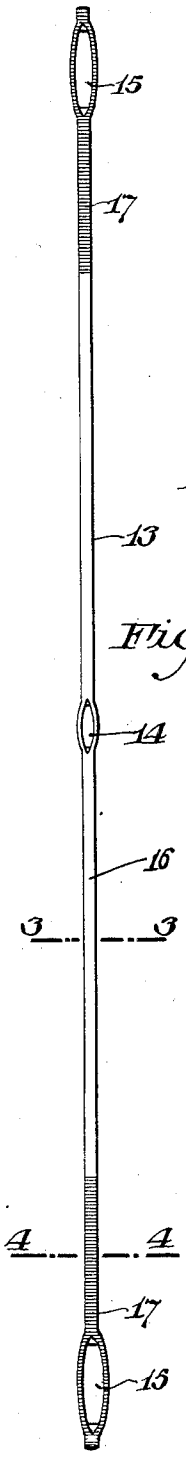


Fig. 2.

Fig. 3.

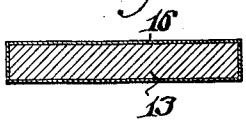
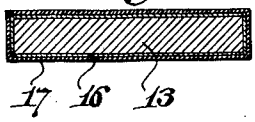


Fig. 4.



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Patented July 18, 1939 2,166,895

UNITED STATES PATENT OFFICE

2,166,895

LOOM HARNESS

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Application April 21, 1937, Serial No. 138,072

4 Claims. (Cl. 139—96)

This invention relates to loom harness and relates more particularly to the flat steel heddles which are used for controlling the individual warp ends, to separate the same into sheds between which a shuttle passes to effect the weaving.

One of the principal difficulties which has arisen in the use of steel heddles in loom harness, particularly in those mills in which the atmosphere in the weaving room is maintained at a high degree of humidity, is that the heddles will rust and corrode above and below the shed lines. In some instances this rusting and corrosion will be of such extent as to cause the heddles to break at the shanks of the mortises provided in the heddles for mounting the heddles on the supporting rods of the frames.

It has been customary in the making of loom harness in which flat steel heddles are used, to coat the heddles with a thin surface layer of nickel which, to a certain extent, serves as a rust retardant. This customary coating of nickel, however, is provided for another and different purpose, namely, to reduce the friction of the warp ends against the faces of the heddle as the sheds are formed.

It has been found that if the nickel coating be of such thickness as to serve effectively as a rust preventative, the same is apt to crack and peel with the obviously resultant disadvantages. On the other hand if the softer metals, such as zinc or cadmium are used to coat the heddles throughout their length, the friction of the warp in the harness will be greatly increased, and also it will be found that dark streaks will occur in the cloth whenever the loom is left standing during the periods of cessation of weaving.

With the foregoing in mind, the present invention contemplates the provision of a novel form of flat steel heddle in the use of which ease of manipulation and absence of friction are obtainable, while on the other hand, the rusting and corrosion of the heddles above and below the shed lines are effectively prevented.

The nature and characteristic features of the invention will be more readily understood from the following description, taken in connection with the accompanying drawing forming part hereof, in which:

Figure 1 is a front elevation of a standard form of loom harness frame having mounted therein heddles embodying the main features of the present invention;

Fig. 2 is a face view of one of the heddles detached, and enlarged with respect to Fig. 1;

Fig. 3 is a transverse section of one of the heddles, greatly enlarged, the section being taken on the line 3—3 of Fig. 2; and

Fig. 4 is a similar view, the section being taken on the line 4—4 of Fig. 2.

Referring to the drawing, there is shown in Fig. 1 a heddle frame of ordinary construction comprising top and bottom rails 10 and side struts 11. The side struts 11 serve to support the heddle rods 12 upon which the heddles 13 are mounted.

The heddles 13 comprise thin flat strips of steel provided centrally with warp eyes 14, and at each end with mortises 15 for mounting the heddles on the supporting rods 12. The warp eyes 14 and mortises 15 are preferably formed as in the usual and customary types of flat steel heddles, and may be of any preferred style or configuration.

In the manufacture of the heddles, after the warp eye and mortises are formed and brought to the desired shape and suitably smoothed, the entire length of the heddle is given a thin coating or plating 16 of a relatively hard metal such as nickel which is capable of taking a high polish. This coating 16 of nickel, or the like, must, however, be relatively thin, as otherwise when the loom harness is subjected to the shocks and rough usage incidental to the weaving operations, the coating will crack and peel at various places, resulting in an undesired roughness, incidental sharp edges, and an exposure of the steel body of the heddle to the full effect of any dampness which may be present in the atmosphere.

After the heddles are coated in their entirety, as aforesaid, they are then given a coating 17 of a soft metal, such as zinc or cadmium, at those portions at each end thereof, which are respectively disposed above and below the shed lines of the warp. This coating 17 has a sufficient thickness and density as effectively to serve to prevent any dampness which may be in the surrounding atmosphere from affecting the body portion of the heddle under said coating, and being of a soft ductile character, the same will readily withstand the shocks and rough usage to which the heddles are subjected.

In the use of the heddles in the loom, the raising and lowering of the harnesses in which the heddles are mounted, with the resultant rubbing of the warp on the side faces of the central portions of the heddles, will effectively serve to maintain such central portions in a polished condition free from rust.

It may be found preferable to extend the coat-

ing 17 of the soft metal at the end portions to a point slightly within the shed lines, although, if this be done it will be incumbent upon the operator of the loom, whenever the same is brought to a stop, to make sure that the respective harness frames are brought to such relative positions that the warp will be left in such positions, while the looms stand idle, as to avoid contact of the warp with the soft metal coating at the ends of the heddles, which otherwise might discolor the same through chemical or other action.

I claim:

1. In a loom harness, a plurality of heddles made of thin flat steel each entirely enclosed within a relatively thin coating of hard metal adapted to take a relatively high polish, and also having each end portion above and below the shed lines enclosed within a heavier rust preventative coating of soft ductile metal superposed over the thin hard metal coating.

2. In a loom harness, a plurality of heddles made of thin flat steel each entirely enclosed within a relatively thin coating of hard metal such as nickel adapted to take a relatively high polish, and also having each end portion enclosed within a heavier rust preventative coating of soft ductile metal such as zinc or cadmium.

3. In a loom harness, a plurality of heddles made of thin flat steel each entirely enclosed within a relatively thin coating of hard metal such as nickel adapted to take a relatively high polish, and also having each end portion above and below the shed lines enclosed within a heavier rust preventative coating of soft ductile metal such as zinc or cadmium superposed over the thin hard metal coating.

4. In a loom harness, a plurality of heddles made of thin flat steel each entirely enclosed within a relatively thin coating of hard metal adapted to take a relatively high polish, and also having each end portion entirely enclosed within a heavier rust preventative coating of soft ductile metal.

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